

STATE OF NEW MEXICO
DEPARTMENT OF PUBLIC HEALTH
SANTA FE

REPORT ON PNEUMONIA CONTROL PROGRAM

1940-1941

Appreciation is hereby expressed to the United States Public Health Service for providing funds making this program possible; to the hospitals and laboratories serving as pneumonia control stations; to the physicians and health officers for their most excellent cooperation.

The following brief remarks on the 1940-41 program may be of interest to those who participated:

Thirteen stations were established throughout the state where laboratory facilities were available. Laboratory facilities were placed at the disposal of physicians, assuring prompt accurate diagnosis and adequate check of the patient's condition while under therapy. Specific drugs and type specific serum were furnished through the stations. These facilities were made available without cost to patients who were unable to pay for them. Stations did the required laboratory work according to approved fee schedules. The physician's request for these services and medicaments was accepted as indicating that the patient was entitled to receive them.

Based on funds available and estimates of costs of treatment, each station was limited to a maximum number of cases to be treated, although as the program progressed, it was possible to make certain adjustments enabling some stations having heavier demands to treat more cases in lieu of other stations receiving fewer requests. The program was opened November 1, 1940 and terminated June 1, 1941.

Two hundred and sixteen cases were treated with two hundred recoveries and sixteen deaths, a fatality of 7.4%. This is a marked reduction from the 11.9% of last year's program. In view of the United States Public Health Service's stated purpose of arranging programs ".... designed to aid the medical profession in reducing pneumonia mortality", a 7.4% fatality for all cases, types and age groups assumes considerable significance when compared with the average fatality of about 25% to 30% before introduction of chemotherapy. Cases treated by stations were as follows:



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Station		<u>Cases</u>		
		Total	Recovered	Died
1	Santa Fe	8	8	0
2	Gallup	24	22	2
3	Albuquerque	7	7	0
4	Albuquerque	1	1	0
5	Albuquerque	0	0	0
6	Albuquerque	17	14	3
8	Las Cruces	35	32	3
9	Raton	6	3	3
10	Clovis	13	13	0
11	Las Vegas	30	27	3
12	Carlsbad	29	28	1
13	Carlsbad	20	20	0
14	Silver City	26	25	1

It is perhaps worth noting that the three deaths at Station 9 were complicated by or had the following associated conditions: alcoholism and myocarditis, cardiac failure, uremia. This dispells any tentative assumption, based on the figures above, that pneumonia is more apt to be fatal in any particular section of the state.

Total amount of sulfapyridine used was 3,430.7 grams; average per case, 17.2 grams. Some few physicians preferred sulfathiazole which was exchanged for the sulfapyridine issued by stations.

Total amount of serum used was 3,192,500 units; average per case, 51,492 units. While it was suggested that sulfapyridine be administered first with serum to be furnished all cases not responding promptly, or in which sulfapyridine might be otherwise contraindicated, it was, of course, left entirely to the discretion of the physician. Such satisfactory results were obtained with sulfapyridine that one station issued no serum for its twenty-nine cases and at another station serum was found necessary for only one case out of twenty. Some physicians, however, preferred to combine sulfapyridine and serum from the onset. While the percentages given below cannot be considered entirely indicative, due to the great numerical differences in the groups, it is to be noted that the fatality for the group receiving sulfapyridine only compares favorably with that for the group receiving both sulfapyridine and serum. It is felt that a 100% recovery for the group receiving serum only cannot be considered significant, based as it is on only two cases.

	<u>Cases</u>			
	Total	Recovered	Died	Fatality
Received sulfapyridine only	146	137	9	6.2%
Received both sulfapyridine and serum	61	55	6	9.8%
Received serum only	2	2	0	0
Received neither	7	6	1	14.3%

It has been pointed out that one of the advantages of chemotherapy in the treatment of pneumonia is its comparatively low cost. For the two hundred and sixteen cases treated on this program the average cost per case was found to be \$12.80. While this figure does include administration costs for the whole program, it must also be remembered that in some cases much laboratory work was done in excess of the maximum laboratory fee to which stations agreed to limit their charges.

At one station an arrangement was made between physicians and the hospital allowing all program patients to be treated in the hospital.

	<u>Cases</u>		
	Total	Died	Fatality
Hospital	120	13	10.8%
Home	93	3	3.2%
Both	3	0	none

For the country as a whole the fatality rate in private practice is distinctly lower than that in hospitals since the most severe cases are hospitalized.

ANALYSIS OF CASES

I

	<u>Cases</u>			
	Total	Recovered	Died	Fatality
Broncho pneumonia	63	59	4	6.3%
Lobar pneumonia	152	140	12	7.9%
Final diagnosis influenza	1	1	0	0

II

The two hundred and sixteen cases were fairly evenly distributed between male and female.

	<u>Cases</u>			
	Total	Recovered	Died	Fatality
Male	115	102	13	11.3%
Female	101	98	3	3.0%

Some leading medical authorities state that sex appears to have very little influence on the death rate of pneumonia.

III

Ages ranged from three weeks to ninety-three years:

Age Group	Total	Cases		Fatality
		Recovered	Died	
Under 1	23	18	5	21.7%
1 - 4	38	37	1	2.6%
5 - 9	18	18	0	0
10 - 19	20	20	0	0
20 - 29	27	27	0	0
30 - 39	28	27	1	3.6%
40 - 49	21	20	1	4.8%
50 - 59	19	16	3	15.8%
60 - 69	8	8	0	0
70 - 79	11	8	3	27.3%
80 and over	2	0	2	100.0%
Unknown	1	1	0	0

While an almost equal number of males and females were treated it is extremely interesting to note that there were no deaths among females between the ages of twelve months and ninety-three years. It is also of interest that there were no deaths of either sex between the ages of twelve months and thirty years. Fatality for those under one year was 21.7% (males 17.4%; females 4.3%).

IV

Practically all known types were represented and were fairly evenly distributed in age groups and by sex. All types with the possible exception of Type 2 were fairly evenly distributed throughout the state. There was some evidence that Type 2 was somewhat more prevalent in the southwestern part of the state. Nine cases had more than one type, fifteen were due to streptococcus, seven to Friedlander bacillus, thirty-six were undetermined type and the diagnosis of one case was changed to influenza.

V

Of the two hundred cases that recovered, sixteen cases followed acute infections such as influenza, scarlet fever, measles, etc. Two were post operative. Thirty-three had various complications and associated conditions; of these, five were pregnant, one of which had empyema and another tuberculosis. Five had otitis media, one had pneumococcus meningitis, another had typhoid fever, empyema and hematuria. Other complications or associated conditions were empyema, tuberculosis, uremia, and various cardiac conditions. Of the total of fifty-one cases showing various complications, twenty-five were male

and twenty-six were female. While the number was evenly divided between male and female, it is interesting that of the eight cases showing heart conditions seven were male. The one female having a heart condition was a child twelve months old who was improving under treatment then died suddenly; the complication was given as cardiac insufficiency.

Of the seven males having cardiac conditions five died. One of these was a child three months old and an autopsy revealed vegetative endocarditis.

VI

Deaths by Types of Pneumococcus

Types	Cases			Fatality
	Total	Recovered	Died	
2	35	32	3	8.6%
3	11	9	2	18.2%
6	7	6	1	14.3%
7	9	8	1	11.1%
11	4	3	1	25.0%
19	12	10	2	16.7%
20	4	3	1	25.0%
Streptococcus	15	14	1	6.7%
Undetermined	36	32	4	11.1%

Analysis of Deaths

Of the five deaths in children under one year of age, three were lobar and two broncho pneumonia. Physicians' comments on four of the case records were as follows:

- Case A "Patient in extremis when admitted. No opportunity to get treatment carried out."
- Case B "Dehydration. Toxic nephritis? Autopsy: Vegetative endocarditis. Patient died before treatment could be instituted."
- Case C "Baby dying when first seen by doctor and on admission to hospital."
- Case D "Death apparently from toxæmia - temperature normal for several days before death."

The fifth in this group was a very interesting case. There were no comments on the case record. According to the laboratory report the first laboratory work was done on the case February 28, 1941. At this time the total white count was 41,000; lymphocytes 54%, mononuclear 3%, eosinophils 2%, polymorphonuclear 41%; red count 5,250,000. Positive for Type 19 pneumococcus, urine showed albumin plus 1 and a trace of sugar.

March 2. Total white count 53,460; lymphocytes 34%, polymorphonuclear 12%, mononuclear 3%, eosinophils 1%; red count 4,350,000.

March 3. Urine showed albumin, sugar and acetone.

March 4. Total white count 46,100; lymphocytes 63%, polymorphonuclear 33%, mononuclear 3%, eosinophils 1%; red count 4,650,000.

March 6. Total white count 56,100; lymphocytes 67%, polymorphonuclear 29%, mononuclear 3%, eosinophils 1%; red count 4,350,000.

March 7. Sulfapyridine discontinued - pneumonia cleared up.

March 8. White count 19,550; lymphocytes 69%, polymorphonuclear 27%, mononuclear 3%, eosinophils 1%; red count 5,250,000.

March 9. Pneumonic condition again appeared. Temperature 104. Pharyngeal smear again showed pneumonia Type 19.

March 10. Total white count 21,450; lymphocytes 64%, polymorphonuclear 34%, mononuclear 2%.

March 11. Suspected whooping cough.

March 12. Total white count 12,700; lymphocytes 74%, polymorphonuclear 20%, eosinophils 2%, basophils 2%, mononuclear 2%.

Comments - This child improved satisfactorily and was dismissed from the hospital March 23. Two days later, March 25, she was readmitted. Pharyngeal smear negative for pneumococci.

March 31. Total white count 4,050; polymorphonuclear 10%.

April 1. Patient died.

During the course of her illness she received a total of 12.5 grams of sulfapyridine and 40,000 units of serum. She was eleven months old.

Physicians' notations on case report cards of fatal cases in other age groups follow:

<u>Age Group</u>	<u>No. Cases</u>	
1 - 4	1	Cardiac insufficiency. Baby apparently improving under treatment. Death very sudden.
30 - 39	1	Decompensated mitral heart (old cardiac).
40 - 49	1	Uremia. Blood urea 79.65.
50 - 59	3	Alcoholism, myocarditis. (Leukocyte count dropped to 2,800 after taking four grams of sulfapyridine.) No comments on the other two cases.
70 - 79	3	Cardiac failure; congestive heart failure: terminal pneumonia.
80 plus	2	Tuberculous broncho pneumonia. No comments on second case in this group.

While results of one such program present nothing of conclusive nature, it is hoped that comparisons of studies of this kind from year to year will result in establishing even more effective methods for the control of pneumonia in New Mexico.

Division of County Health Administration
September 5, 1941